

ABSTRAK

WAHYU APRILIYANTO: Rancang bangun *wireless charger handphone* dengan pendekatan VDI2221-*Design of experiment*.

Wireless power transfer suatu sistem yang memiliki proses dimana daya listrik dapat ditransmisikan dari suatu sumber listrik menuju beban tanpa melalui suatu kabel. Penelitian sebelumnya menggunakan *coil transmitter* berjumlah 20 lilitan dengan diameter 9 cm dan *coil receiver* yang berjumlah 36 lilitan dengan diameter 9 cm. Diketahui bahwa laju *prosentase* pengisian baterai sebesar 20% tiap 10 menit dan sebelumnya baterai tersebut telah terisi 20% daya. Pada penelitian ini akan dibuat pengembangan dari pembuktian tersebut yaitu dengan membuat suatu produk *wireless charger handphone* yang diinginkan oleh konsumen dengan menggunakan metode vdi 2221. Kemudian untuk mengetahui pengaruh *rasio diameter coil* dan jenis *coil transmitter* terhadap laju *prosentase* pengisian *baterai handphone*, maka digunakan metode *design of experiment*. Hasil penelitian dengan *design of experiment* rangkaian acak lengkap faktorial 3^2 menunjukkan bahwa faktor A (*rasio diameter coil transmitter-receiver*) mempunyai nilai dari $F_{hitung} 8.686 > F_{tabel} 5.555$, maka tolak H_0 artinya ada pengaruh signifikan terhadap faktor *rasio diameter coil transmitter-receiver* terhadap laju *prosentase* pengisian *baterai* pada *wireless charger handphone*. Sehingga dengan menggunakan metode VDI2221 terpilih alternatif konsep produk 5 dan pada saat pengujian *wireless charger* dapat mengisi *baterai* dari 10%, 20% hingga 30% dalam waktu 30 menit (masing-masing 10 menit). Sehingga *wireless charger handphone* sesuai dengan harap yang artinya berhasil.

Kata Kunci: *Wireless charger handphone*, VDI2221, *Design of experiment*, *Faktorial*, Rancangan acak lengkap.

ABSTRACT

WAHYU APRILIYANTO: *Design of wireless mobile phone charger with VDI2221 approach-Design of experiment.*

Wireless power transfer system that has a process where electrical power can be transmitted from a power source to the load without going through a cable. Previous research using the transmitter coil windings numbered 20 with a diameter of 9 cm and a receiver coil, amounting to 36 loops with a diameter of 9 cm. It is known that the percentage of battery charge rate of 20% every 10 minutes and before the battery has charged 20% power. In this study will be made the development of such evidence is to create a wireless mobile phone charger products desired by consumers using VDI 2221. Then to find out *pegaruh* coil diameter ratio and type of transmitter coil to the percentage rate of the mobile phone battery charging, then used the method design of experiment. Results of research by design of completely randomized factorial experiment circuit 32 indicates that the factor A (ratio of transmitter-receiver coil diameter) has a value of $8,686 F_{arithmetic} > F_{table} 5555$, then reject H_0 means that there is a significant influence on the ratio factor transmitter-receiver coil diameter of the percentage rate battery charging in wireless mobile phone charger. Therefore, by using the method chosen VDI2221 alternative product concepts 5 and during the testing of wireless charger can charge the battery from 10%, 20% to 30% within 30 minutes (each 10 minutes). So that wireless mobile phone charger in accordance with the hope that means successful.

Keywords: *Wireless mobile phone charger, VDI2221, Design of experiment, factorial, completely randomized design.*